

The A-B-C's of prescription burning: Careful planning goes into process

by Dianne Maclean

A fairly nice early July day in South Central Alaska, one can just imagine it. Sunny and downright warm, the first reds are in, flowers are out, and the motor homes are honking their way into town.

Everywhere you look it is summer, sun and sure to be fun.

But what is that ugly brown smudge on the horizon that looks like smoke?

Someone in town says the refuge is doing a prescribed burn. Some eyebrows rise. Why in the world now? People are here to visit, and isn't it fire season? And what about all those news stories from prescribed burns that "got away" in other parts of the country?

These are questions that need to be asked, and actually are asked by fire managers themselves before the decision is made to conduct a prescribed burn (an Rx burn for short). The process begins months, sometimes years before a burn takes place. Public knowledge of and support for prescribed burning and how burn projects develop is important to the success of the entire program.

The first step is the identification of areas that would benefit from prescribed fire. Fire's role on the Kenai Peninsula is very different from what it is in the drier forests of the Lower 48, or even from other regions of this state. Many habitats in Alaska are adapted to fire. The landscape of the interior shows a lot of fire activity over the years, in fire scars and vast swaths of new trees.

Our landscape is more limited in size, and receives less lightning. But our spruce and hardwood forests have developed with occasional, fairly intense fires. The hardwoods especially depend upon that sort of disturbance to begin new stands that in turn provide browse and cover for many species of wildlife.

Identifying areas to consider burning begins with biologists from our own and other agencies giving direction on what they would like to achieve (objectives) through prescribed burning. It also begins with public input, with the overall plan for management of the refuge that tells the public where we will or won't use fire. Many areas are identified in formal

plans that cover a period of years. Other areas come about through discussion with neighboring agencies, and some are identified as a result of national focus on reducing hazardous amounts of dead and down trees, other woody debris (fuels) that pose a threat to homes, subdivisions or towns.

Once we have objectives in mind and we assess the fuels in an area, we begin to look at the specifics of how an Rx burn might be accomplished. We look at surrounding terrain, proximity to private or other lands, the likelihood of smoke impacting highways or homes, and the measures we would have to take to secure the boundaries. Areas that already have some natural boundaries, like rock ridges or rivers, that provide a good barrier to fire are always good because there is less impact to the land and less cost if we don't have to construct a barrier (control line).

We use both experience and computer models to give us the range of fire behavior we might see out there under a variety of conditions. Fuel moisture, the amount and size of the fuel, wind from several directions at different speeds, the slope of the land and how much sun it gets (aspect) are the conditions that affect fire behavior. Many different combinations of these conditions go into the mathematical formulas that tell us how fast the fire is likely to spread and how intense it will be.

From this we can get a range of limits to these conditions, or parameters within which to conduct the burn. The overall description of objectives, reasons for the burn, parameters, expected fire behavior and its effects on the vegetation or wildlife is called the prescription. Computer models are pretty precise, but they are still models and we will adjust the parameters that go into our final burn plan according to the experience of our fire managers, scientists and weather forecasters. Our climate affords relatively narrow windows for getting a burn accomplished.

We are often looking to get hardwoods to come in for a period of 20 or 30 years, much as they often would after a wildfire. We need the top layer of broken down material, the duff, to be dry enough to burn

well so that birch and willow have some soil to start out in, but not so dry that we have problems controlling the burn. The conditions that allow us to do this usually fall within the normal fire season, so reaching the right conditions and having personnel at the same time is a balance that, in some years, we cannot reach. Those conditions and requirements are all set forth in the burn plan.

The burn plan is a document that is a set of instructions, a recipe of sorts, for accomplishing the prescribed burn. The burn plan lists the acceptable limits to all parameters, the wind speeds, relative humidity, etc. These objectives, parameters, boundaries, and back-up planning if some aspect of the burn starts to go “out of prescription” are reviewed and must get approval by the regional office in Anchorage.

The minimum number of personnel and firefighters required to accomplish the burn and to provide for any contingencies or problems will also be listed, and will be available on the day of ignition. All parameters must be within the approved prescription in order for the Burn Boss to go ahead with the burn. Measurements will be taken of those items listed in the parameters section of the burn plan before any match can be lit. Winds, fuel moistures and humidity are recorded, a spot weather forecast will be requested to get a weather report from the National Weather Service in Anchorage that is tailored to just the specific area that the burn is going to take place. A helium balloon might be released if there is any question about the winds aloft that would transport smoke.

If the burn is a go, then Kenai Base at our main refuge headquarters in Soldotna will be notified that ignition is proceeding. They will in turn notify the Alaska State Troopers and make any other necessary contacts.

A Burn Boss does every prescribed burn that is conducted by any agency. This individual has generally had years of training and experience and meets standards of approval for that qualification. The Burn Boss is in charge of that burn and is responsible for meeting objectives and keeping the burn within the boundaries outlined in the burn plan. The Burn Boss will have a Holding Boss to assist with control of the burn and possibly an Ignition Specialist if the burn is so large or so complex that the ignition firing will be

almost a separate operation with the Burn Boss over all.

The Holding Boss will in turn supervise the engines and holding crew, and will make decisions on deploying people and water, hoselays, etc., to areas of the burn unit that might present a containment problem. The Ignition Specialist, if there is one, or the Burn Boss themselves will direct the lighters, both those on the ground that are lighting by hand with drip-torches and the pilot of the helicopter if aerial ignition is used. Aerial ignition requires specialized equipment and training for the ground crew and for the pilot of the aircraft if one is used.

The prescribed burn crew also consists of many people behind the scenes, those handling the radios, shuttling fuel, the weather forecasters, even security if needed for an aircraft or road closure.

Once the firing of the burn unit is completed, the crew will monitor the burn, and continue to clean up any significant smoldering along the lines until the active burning period is over. A patrol will continue to monitor for further activity for days, weeks or whatever it takes until the burn is declared out.

But the work doesn't end there—the biologists and fire effects specialists will continue to review the burn over time for achievement of those objectives that started the whole process to begin with. Researchers from the Pacific Northwest Research Station in Seattle did pre-burn and post-burn monitoring plots on our Mystery Creek units this past season to learn more about how fires burn and consume ground fuels and duff in these spruce and hardwood forests in this unique coastal climate.

The Kenai Refuge was pleased with the success of 1,100 acres of prescribed burning in the Mystery Creek area this past season. Several prescribed burn projects are scheduled for the coming year. If you have an interest in observing a burn in progress, contact Doug Newbould, Kenai Refuge Fire Management Officer at 260-5994.

Dianne MacLean is a prescribed fire technician with the Kenai National Wildlife Refuge. For more information about the Refuge, visit the headquarters in Soldotna, call (907) 262-7021. Previous Refuge Notebook columns can be viewed on the Web at <http://kenai.fws.gov>.